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ABSTRACT

A study focused on types of talk between parents and children as predictors of development of skills such as narrating, explaining, and describing. The study investigated some measures of home language environment and their relationships with literacy outcomes. Eighty-four 3-year-old children from low income families in the Boston (Massachusetts) area were visited to gather information about the family's social and economic circumstances and their literary practices. The mothers were asked to read to and converse with the children during the visits, and, at the end of their kindergarten year, the children were given a battery of standardized tests of linguistic and cognitive skills and asked to perform a set of independent language tasks. Results indicated that a combination of home social and economic measures, general family conversation measures, and child language measures are the best predictors of formal definitions scores and story comprehension scores. However, results demonstrate the mother's impact in the information index (for bookreading) as a reflection of her ability to involve the child in the conversation. The presence of discourse talk in models predicting literacy outcomes suggests that families that engage in decontextualized talk, such as explanatory talk and narrative talk, expose their children to interesting and extended and sophisticated ways of expressing themselves. (Seven figures and seven tables of data are included.) (PRA)

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Home Contributions to Early Language and Literacy Development

Symposium: From Three to Six: Home and Preschool Supports for Literacy Development Among Low-Income Children

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Introduction

A growing body of research in the area of literacy development has attempted to demonstrate clear relationships between how parents talk to children and later developmental outcomes. This research often focusses on types of talk between parents and children as predictors of development of skills such as narrating, explaining, and describing. These skills, in both oral and written form, are necessary for success in school, and their development is believed to be facilitated by specific kinds of social interaction in which the audience is at a distance physically or socially from the speaker and shares only limited knowledge with the speaker (Snow, 1991).

It is Snow's contention that oral language is not a single ability, but that different skills are developed in different contexts for different purposes. These various purposes and skills are then differentially related to outcomes such as oral monologue skills, reading, and writing. The Home-School Study of Language and Literacy Development (Snow, Dickinson, & Tabors, 1989) is a longitudinal study that is investigating the different settings and skills found in children's early language environments as predictors of later literacy development. In this paper, we investigate some measures of home language environment and their relationships with literacy outcomes.

The Study

Subjects

Three-year-old children were recruited preschool programs (including some Head Start programs) in the greater Boston area. Specifically, we looked for children who were eligible for Head Start (and therefore their families were considered to be low-income) and for whom English was their home language. Eighty-two families agreed to participate in the study for a total of 84 children (two families had twins). There was no attrition between the first and second home visits.

Low-income families were chosen as subjects in the larger study for two reasons: (1) similar data have already been collected on middle-class samples in many other studies, so we have a reasonably clear portrait of middle-class children's language environments and later literacy development, and (2) because children from low-income families represent a wide variety of homes, support structures, and subcultures, we would expect broad variation in performances on the tasks.

The Families

The children come from a range of cultural, racial, and economic backgrounds. Fifty-five of the subjects (65.5 percent) were white, twenty-three (27.4 percent) were African-American, and six (7.1 percent) were Hispanic (see Figure 1). There were 41 males and 43 females.

Although the families in the study are considered to be low-income on the basis of the. child's eligibility for Head Start, they represent a wide range of social and economic situations. About half of the mothers (48.8 percent) reported that they had graduated from high school, and had not pursued further education (see Figure 2). A quarter of the mothers (25.0 percent) had not finished high school, while the remaining quarter (26.2 percent) had received some post-high school education, usually some vocational training. Mothers reported a wide range of annual income levels from below $10,000 to over $25,000 (see Figure 3) and income sources (Figure 4). Over half of the families (47) reported their income to be less than $15,000. Figure 5 indicates that families reporting higher levels of income had more children on average. For example, families reporting an annual income of $25,000 or more had an average of 2.8 children, while those in the lowest level of income had only 2.0 children on average. Thirty-four of the families reporting the lowest income levels also reported that welfare was their primary source of income. Twenty-three families in the lowest income levels were single-parent families. Nineteen single-parent families reported welfare as the primary source of income. Single-parent families were those

Figure 1

Race

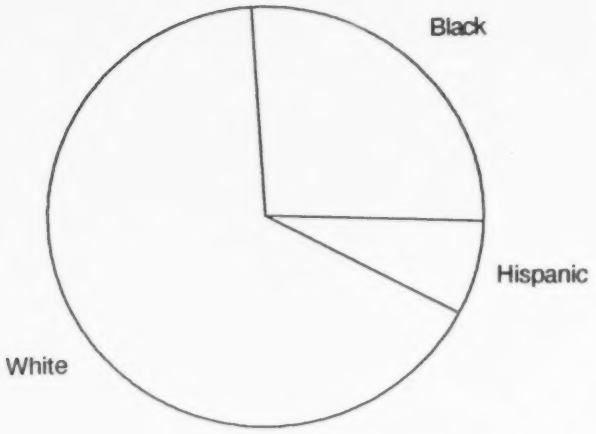


Figure 2

Mother's Education

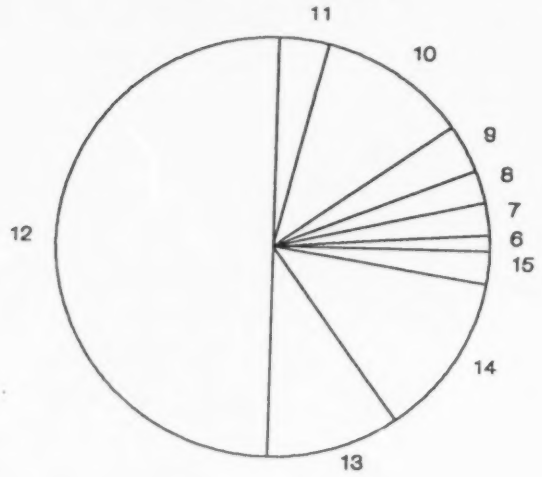


Figure 3

Income Level

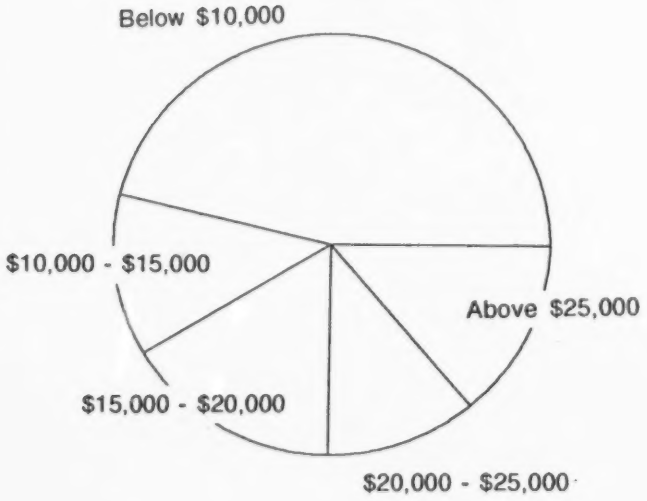


Figure 4

Income Source

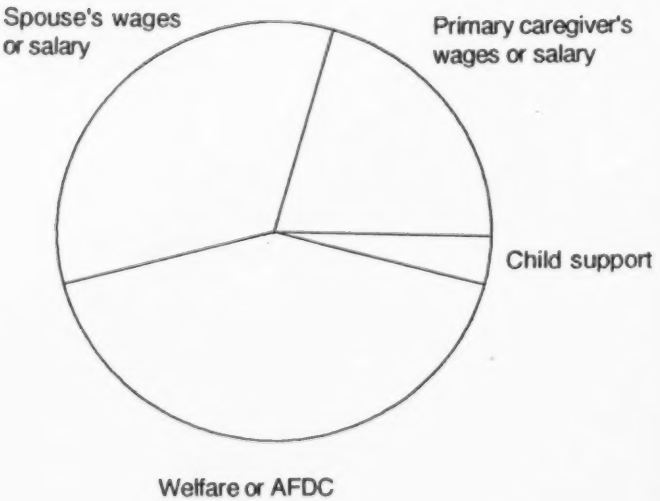


Figure 5

Number of Children In Family by Income Level

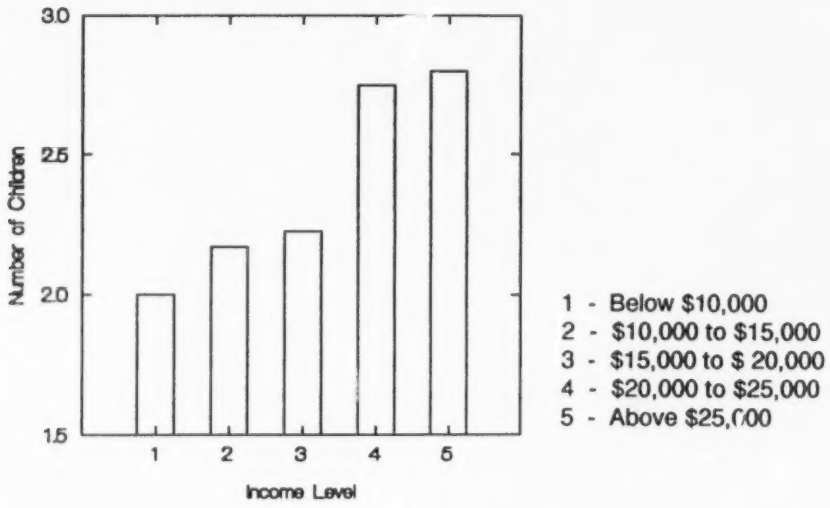


Figure 6

Number of Adults in Home

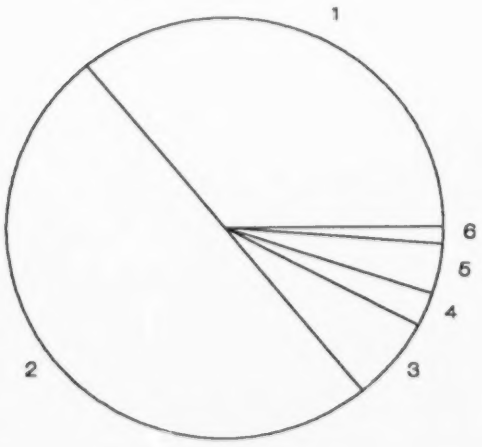
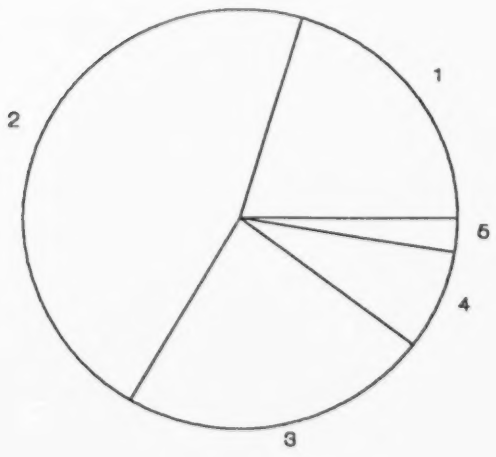


Figure 7

Number of Children in Home



in the lowest income levels.

Family configurations varied widely in the sample (see Figures 6 and 7). A total of 28 families consisted of one parent (mother) and children. Thirty-nine families reported two adults, usually the father, step-father, or another adult male. Eleven other families reported the presence of more than two adults living in the home. For example, two families consisted of the mother, target child, and the mother's parents. In these two cases, the child received lots of adult attention in everyday interactions.

Data Collection

In the Home School Study of Language and Literacy Development, home visits occurred once each year, when the target children were three years old and again when they were four years old. During these visits, we asked the mother to read two books to her child, elicit a report from the child about some interesting event, and record a family mealtime conversation. We also interviewed the mother in order to gather information about the family's social and economic circumstances and their literacy practices.

At the end of their kindergarten year, target children were given a battery of standardized tests of linguistic and cognitive skills, and asked to perform a set of independent language tasks. Among these measures were a story comprehension task, in which the experimenter read the children's book Snowy Day, by Ezra Jack Keats (1962) and asked a series of questions, tapping the child's world knowledge and inferential ability. A definitions task, in which the child was asked to give definitions of 14 nouns, was administered. These definitions were rated on how formal they were (inclusion of a superordinate category with a relative clause; e.g. "a thief is a person who steals").

Home Language Measures

Mealtimes

The different family profiles became prominent when we examined family mealtime conversations. At the end of each home visit, we left a blank tape with the mother, asking her to record a mealtime and mail the tape back to us. These tapes provided us with a sample of conversation among family members without the presence of an experimenter. While the presence of the taperecorder would have altered the conversation to some extent, we believe that the conversation would indicate what kinds of talk the families felt researchers of language would want to hear. So we expect that if mothers and fathers and children are performing for the tape, they are showing us what they think is good for the child's development.

Mealtimes conversations were varied widely in their style. They were almost always dinner, but some breakfast and lunch conversations were recorded. Some consisted of family members watching television while they were eating and talking about the show that was on at the time. Others seemed to be occasions for family meetings, a time when everyone talked about their day, what they did and what they learned, and a time when they made and shared plans for the future. They ranged in length from 3 minutes of recording to 47 minutes; from 23 utterances to 1016 utterances. Some conversations included mother, father, target child, and siblings, while others were only between mother and target child. Others included other relatives or friends. Conversations were free-wheeling, jumping from topic to topic and speaker to speaker, especially when there were larger groups of people present at the meal, making the tapes especially difficult to transcribe.

Because we had to depend on families to make tapes and return them to us, we did not receive tapes from all families. After the first home visit, 62 families, returned mealtime tapes. Both families with twins returned tapes, so the total sample is 64 children. After the second home visit, only 45 families returned tapes. One family with twins returned a tape, so we have a total sample of 46 children at the second home visit.

While there are many ways to analyze mealtime conversations, we were especially

interested in occurrences of extended discourse around a particular topic. So we analyzed mealtimes for the presence of narratives and explanations. Narratives were defined as at least two temporally sequenced events (Labov, 1972) within the conversation. These narratives were generally recounts of past events, as in Example 1, or discussions of future plans or possibilities, as in Example 2.

Example 1 (David, age 4)

*Mother:	so did you tell Daddy about the little girl on the slide at the playground?
*David:	yeah.
*Father:	yes he did.
*Father:	and I said to him "geez that was an excellent safety move that you made there".
*Father:	put the brakes on huh? before you got to the end.
*Mother:	she was just a little tiny kid and said "David wait wait!" huh?
*David:	but they stopped.
*Mother:	yeah that's right you didn't stop but you grabbed the sides of slide so you wouldn't go.
*Mother:	she was just a tiny kid and she wasn't even aware or anything.
*Father:	mmhm.
*Mother:	she was just barely able to walk huh?

Example 2 (Emily, age 3)

*Mother:	guys hurry up.
*Mother:	we got to go soon.
*Brother:	where?
*Brother:	what time?
*Mother:	I have to leave in twenty minutes.
*Emily:	where?
*Mother:	and I have to take a shower yet.
*Mother:	we're going to church!
*Brother:	twenty minutes?
*Mother:	uhhum.
*Mother:	hurry up.
*Brother:	I don't think we're going to make it Mom.
*Mother:	well hurry up!

We also looked for occurrences of explanatory talk. We defined explanations as conversational exchanges in which one speaker made some connection clear to another. These connections have been characterized as the answers to questions of why something happened (causal explanations -- see Example 3), why someone behaved in a specific way (intentional explanations -- see Example 4), why someone feels some way (explanation of internal states -- Example 5), what something is like or what something means (definitional/descriptive explanations -- Example 6), how something is done (procedural explanations -- Example 7), and how someone knows something (evidential explanations -- Example 8) (Beals, in press).

Example 3 (Kevin, age 4)

*Brother: I wonder why every time the bubble go up it hits the top # it pops!
*Mother: (be)cause it hits the air.
*Mother: that makes it pop.
*Mother: just like when you blow a bubble?
*Mother: it falls on the grass the grass makes it pop.
*Brother: and some of them never come back down they pop in the air.
*Mother: yup.
*Kevin: yeah.

Example 4 (Brad, age 4)

*Grandpa: you all right dear?
*Mother: yes dad.
*Brad: so how come you said "are you all right"?
*Brad: how come?
*Grandpa: (be)cause it's suppertime and your ma disappeared.

Example 5 (Diane, age 3)

*Mother: are you afraid to dunk?
*Diane: no.
*Mother: why?
*Diane: because I'm a big girl.

Example 6 (Remo, age 4)

*Mother: you know what an excellent means?
*Remo: mommy!
*Mother: you know what excellent means?
*Remo: what?
*Mother: it means you did the best!
*Mother: the best you could.
*Mother: and she was pleased with it.

Example 7 (Conrad, age 3)

*Mother: you add a little water and you shake it up.
*Conrad: is that how you make it Mom that-'is how you make it Mom?
*Mother: that-'is how you get it to go [/] when it-'is all stuck to the sides.

Example 8 (Kurt, age 4)

*Mother: I think Kurt gets to pick it out this time right?
*Mother: because you picked out this kind?
*Kurt: yeah.
*Elaine: nuhuh I didn't pick it.
*Mother: oh no it's mommy's turn to pick one out.
*Kurt: no.
*Mother: yeah because you picked out the Kool Aid coolers.
*Mother: right?
*Kurt: mommy, didn't Elaine?
*Mother: no you did when you were sick.
*Mother: remember?

Each transcript was coded for the presence of narrative and explanatory talk. Table 1 presents the means and ranges of frequencies and proportions of such talk at mealtimes.

Table 1
Mealtime Variables

Variable	n	Mean	S.D.	Range
Number of Narratives (age 3)	62	3.47	3.15	0-15
Number of Narratives (age 4)	45	3.84	3.25	0-11
Percent of Talk Narrative (age 3)	62	16.1	14.9	0-75.2
Percent of Talk Narrative (age 4)	45	11.8	10.4	0-39.2
Number of Explanations (age 3)	62	12.4	10.7	1-45
Number of Explanations (age 4)	45	13.4	7.6	0-27
Percent of Talk Explanatory (age 3)	62	15.8	13.1	0.7-79.1
Percent of Talk Explanatory (age 4)	45	18.7	16.8	0-91.4
Percent of Exp. Talk by Child (age 3)	61	30.2	17.6	0-100
Percent of Exp. Talk by Child (age 4)	44	31.7	14.2	4.3-66.7

The first eight variables reported in Table 1 are measures of family interaction, giving us an clue to the child's exposure to discourse talk. The last two variables, the proportion of explanatory talk that the target child is responsible for at ages 3 and 4, indicate that these children are important contributors to such conversations.

The proportion of talk that was narrative dropped between ages 3 and 4 (mean difference = 4.265 percent, $\underline{T} = 2.023$, $\underline{p} < .050$, $\underline{n} = 41$), but the proportion of the explanatory talk and narrative talk was roughly equivalent at age 3. At both age-three and age-four mealtimes, there were only 3 or 4 narratives per mealtime on average, but there was an average of 12 or 13 explanations per mealtime (age 3: $\underline{T} = 7.729$, $\underline{p} < .001$; age 4: $\underline{T} = 9.609$, $\underline{p} < .001$). This result taken with the equivalent proportion of explanatory and narrative talk, suggests that explanations were, on average, shorter exchanges (in terms of number of utterances) than narratives.

Bookreading

Interviews with the mothers provided some insight into the literacy environments of the

children and indicated a great variation in the types of experiences children had with reading, the diversity and frequency of their exposure. According to the mothers' reports, reading books at home was not at all an uncommon activity; 96 percent (74) said they read to their children, 49 percent at bedtime, 8 percent during the day and 8 percent both during the day and at bedtime (the remaining 11 percent indicated that there was no particular routine time for reading). In addition, 78 percent were read to by another family member, 68 percent of all the children were read to by some other family member at least on a weekly basis. Pretending to read was a common play activity for many of the children. According to mothers' reports, 90 percent of these children pretended to read while playing alone and 90 percent pretended to read to the mother or someone else.

Books came from a variety of sources. Supermarkets and discount department stores were mentioned most frequently as a source of books (47 percent). Other sources of books, in descending order of mention were bookstores (38 percent), mail order book clubs (34 percent), gifts (25 percent) and least commonly, the library, which was only mentioned as a source of books by 22 percent of the mothers. At age three, 61 percent of the children owned over 25 books and only 10 percent owned less than 10 books.

In addition to our questions about the child's experience with books, we attempted to ascertain the role of reading for pleasure in the mother's own life by asking her about what types of books she liked to read and if she could name a favorite author. Fifty-four percent of the mothers named one or more favorite authors, 28 percent named a genre of book (such as mysteries or romances) but could not name an author, and 18 percent said they did not read any books at all.

At each of our home visits the mother was asked to look at a book brought by the experimenter, The Very Hungry Caterpillar (by Eric Carle), and at a favorite book familiar to the child. A second book was available if the mother and child did not provide a familiar book.

Bookreading conversation was, in almost all cases, necessarily shaped and directed by the reader (i.e., the mother). Most mothers used a bookreading style of asking questions and commenting at intervals throughout the reading of the text. Two measures were of particular interest during the book reading activity: the relative involvement of the child, and the content of the talk. As a measure of the child's participation, an information index was created as the ratio of the child's utterances in which he gives information (both responses and spontaneous comments) to the mothers' utterances in which she requests information. An information index of 1 suggested that the child answered the mother's questions and did not say more. An index greater than 1 suggested that the child was spontaneously providing information beyond that which was requested by the mother. An index smaller than 1 presented a picture of a mother making more than one request in order to elicit one response from the child.

The second measure of interest involved the content of the talk. While reading, the topic of the language used may be restricted to what the mother and child see before them in the illustrations and hear in the text, or the book may provide a joint topic and starting point for facilitating talk about what is not immediately present, such as predictions, inferences, explanations and associations with past experiences. The contributions to the text by the mother and child were coded to indicate whether or not the comments and questions were non-immediate. Non-immediate utterances move away from information that can be seen on the page or has just been presented in the text, and include comments providing or requests for inferences, evaluations and analyses about the story or connections to the child's own world. This category includes why questions and predictions. Non-immediate talk is more explicit with less reliance on shared physical context. Non-immediate interactions around the book may closely reflect the skills that will be required in school for later successful literacy and school achievement. Examples 9, 10, and 11 both drawn from books chosen by the children, contain numerous non-immediate utterances by both mother and child. In Example 11, we see a child asking a why question, to which the mother responds with an intentional explanation.

Example 9 (Ethan, age 3)

*Mother:	"When he's done he'll probably want to take a nap on the cleanser." (laughing)
*Ethan:	And why does he do that?
*Mother:	He's so tired he just washed all the floors in the house! Just a little mouse!
*Ethan:	(small squeak)

Example 10 (Anna, age 4)

*Mother:	"Peter gave himself up for lost and shed big tears but his sobs were overheard by some friendly sparrows who flew to him in great excitement and implored him to exert himself."
*Anna:	To exert? What is to exert?
*Mother:	To exert himself, and then they said to keep on trying to get away.

Example 11 (Anna, age 4)

*Mother:	"Peter asked her which way to the gate but she had so much, she had such a large pea in her mouth that she could not answer she only shook her head at him. Peter began to cry. "
*Mother:	Do you think Peter's sad?
*Anna:	(nods)
*Mother:	Why is he sad?
*Anna:	He's lost in the woods.
*Mother:	His mommy, he didn't listen to his mommy did he?
*Anna:	(shakes head)
*Mother:	Now he's lost.

In Example 11, Anna requests and gets a definition from her mother, while Example 12 is a discussion of feelings that had not been explicitly outlined in the text.

Table 2 presents the percent of talk that was non-immediate by both the mothers and children during each of the four book readings. It also presents the information index, for both the experimenter provided and familiar books, on both home visits.

Table 2
Book Reading Variables

Variable	n	Mean	SD	Range
% of Child Non-Immediate Talk VHC (age 3)	78	13.9	16.3	0-100
% of Child Non-Immediate Talk VHC (age 4)	69	13.5	13.7	0- 50
% of Child Non-Immediate Talk BOC (age 3)	79	16.2	20.8	0-100
% of Child Non-Immediate Talk BOC (age 4)	67	19.2	18.9	0- 80
% of Mother Non-Immediate Talk VHC (age 3)	82	15.2	11.4	0- 60
% of Mother Non-Immediate Talk VHC (age 4)	69	15.4	13.2	0- 53
% of Mother Non-Immediate Talk BOC (age 3)	82	17.1	17.7	0-100
% of Mother Non-Immediate Talk BOC (age 4)	69	18.2	18.3	0-100
Information Index VHC (age 3)	71	1.37	0.93	0-4.33
Information Index VHC (age 4)	65	1.93	2.00	0.18-13.50
Information Index BOC (age 3)	69	2.66	4.49	0-31.00
Information Index BOC (age 4)	54	2.38	3.64	0-24.00

VHC Very Hungry Caterpillar
BOC Book of choice

Because so much of the interaction around book reading consists of questions and answers, comments and responses, it is not surprising that a measure of a particular type of talk would result in similar amounts for the two participants. So for each bookreading the proportion of non-immediate talk by the child is close to that of the mother. The mother and child are jointly focussed on the same topic. It is, however, surprising that when the mother and four-year-old child immerse themselves in Very Hungry Caterpillar at the second home visit, they do not include more non-immediate talk than they had the year before. The increased cognitive and linguistic skills of the child (and the somewhat greater familiarity with the book) are not being tapped through talk about that which is not immediately evident through the text or illustrations.

When the mother and child read a familiar book rather than Very Hungry Caterpillar, a greater percentage of the talk was non-immediate. This trend held up for the talk of the mother and the child, with the three-year-old and the four-year-old. The child was especially affected by the familiarity of the book at age four, using more non-immediate talk with the familiar book than with Very Hungry Caterpillar ($T = 2.062$, $p < .043$).

The information index suggests that with the new book, Very Hungry Caterpillar, children at age three do more than answer their mothers' questions. Their participation with this book is greater, however, at age four than at age three ($T = 2.213$, $p < .031$). There is a trend toward more child participation with the familiar book of choice than with the new book. The three-year-old makes twice as many comments and responses in relation to the mothers questions, when reading the familiar book than when reading the new book ($T = 2.578$, $p < .012$).

Elicited Reports

Elicited reports allowed a mother and child to display their ability to tell a story together. During home visits, we asked mothers to have their child tell about some interesting event that they had attended together. Topics for these reports included a broad range of events, such as trips, either local or long distance, personal events, holiday events, daily events, or book or movie events. In the age-three home visits, 46 percent of the elicited reports were reports of local trips,

compared to only 30 percent of age-four elicited reports. Long-distance trip reports appeared in 18 percent of the age-three reports, but only 2 percent of the age-four reports. Personal events such as a visit to the doctor, a birthday party, a swimming class, or a school pageant accounted for 18 percent of the age-three elicited reports and 27 percent of the age-four reports. Daily events (e.g., what the child did at school today) were described in 10 percent of the three-year-old reports and 15 percent of the four-year-old reports. In 20 percent of the age-four reports, holiday events, such as Easter at grandmother's house or the Memorial Day picnic, appeared, but these only occurred in 3 percent of the age-three reports. Retellings of book or movie plots only occurred about 3 percent of the time at both home visits.

Elicited reports proved to be a difficult task for most of the target children at ages 3 and 4, and mothers had to suggest topics and ask questions in order to lead their children through the telling. However, there were a few children who were able to take on the responsibility of narrating the event without the aid of their mothers' questions.

In order to measure the child's and mother's relative contributions to the elicited report, we coded all utterances within the report for the give and take of information between mother and child. Mothers generally asked questions of the children, leading them through the telling. Example 12 is a typical elicited report of a local trip.

Example 12 (Alisa, age 3)

*Mother:	tell me about when you went with Miss Jackie where did you go?
*Alisa:	to the Whalom Park.
*Mother:	Whalom Park.
*Mother:	what did you do there?
*Alisa:	I went to the on a motorcycle.
*Mother:	what else?
*Alisa:	um I went on the slides.
*Mother:	the slides?
*Mother:	did you see anybody?
*Mother:	did you see anyone?
*Alisa:	I see...
*Mother:	tell me.
*Mother:	tell me.
*Alisa:	I see it um at Whalom Park.
*Mother:	you saw it xxx Whalom Park. [laughs]
*Mother:	what else did you do?
*Alisa:	I went on the [/] on the motorcycle.
*Mother:	you went on the motorcycles?
*Mother:	did you have a good time?
*Mother:	yeah?
*Mother:	you got nothin(g) else to tell me?
*Mother:	didn't you have any cake?
*Alisa:	I haved it.
*Mother:	didn't you have your birthday?
*Alisa:	no.
*Mother:	no?
*Alisa:	they didn't have any birthdays.
*Mother:	no?
*Alisa:	we have only cake.

(continues)

In this example, we see Alisa's mother nominating a topic for the report (the trip with Miss Jackie) and then leading her through the report with questions that frame the report for Alisa. In the latter part of the report, it appears that the mother is challenging Alisa's version of the event ("didn't you have any cake?", "didn't you have your birthday?", "no?") and seems to be leading her to get the facts straight.

As with bookreading, an information index was created, representing the ratio of the number of times the child gave information (both responding to questions and spontaneous comments) to the mother's requests for information. In addition, the child's number and proportion of utterances in which she gave information spontaneously were recorded. Table 3 displays the means and ranges of these measures for the full cohort.

Table 3
Elicited Reports Variables

Variable	n	Mean	SD	Range
Information Index (age 3)	80	.805	.573	0-3.50
Information Index (age 4)	67	.877	.620	0-3.11[1]
Child Spontaneous GI's (age 3)	80	3.56	4.16	0-16
Child Spontaneous GI's (age 4)	71	5.09	8.32	0-53
Percent of Child's GI's Spont. (age 3)	76	24.1	21.7	0-83.3
Percent of Child's GI's Spont. (age 4)	68	30.3	29.3	0-100
Child's MLU within Report (age 3)	76	3.35	1.32	1.0-7.4
Child's MLU within Report (age 4)	67	3.97	2.22	1.3-16.18

At both home visits, the mean information index was below 1, indicating that children tended to give less information than the mothers requested, requiring the mothers to prompt the children repeatedly or to change questioning strategies in order to get a response. In these situations, mothers would simply repeat a question, or they would reduce the level of demand on the child in asking the question, moving from an open-ended questions (e.g., "what did we do yesterday?"), to a more specific question (e.g., "what did we do at the park yesterday?"), to a yes-no question (e.g., "did we play on the swings?"). Some mothers had to use this stepping-down strategy in order to get a response from the child. In two cases, however, the mother simply nominated a topic and the child reported the entire event with little or no help from the mother.

Home Measures as Predictors of Outcome Measures

As stated in the first paper, we are interested in demonstrating the relationships between the child's early language environment and their later success in school and literacy activities. We therefore undertook regression analyses, using the home variables discussed above as predictors

[1] This mean, standard deviation, and range excludes two children's information index, both of which were outliers, of 26.00 and 28.00.

and the kindergarten (age 5) measures described in the first paper as preliminary outcome measures[2]. Preliminary correlational analyses suggested which specific measures to include in models predicting the outcomes.

Predicting Formal Definitions Scores

A formal definitions score for each child was created by compositing the child's mean formal definitional quality score, percent of formal definitions, and the superordinates score on a CAP subtest using principal components analysis. This new composite score was treated as the outcome in our first set of models.

We then created a number of other composites using principal components analysis. These included a demographics composite (made up of mother's educational level and family income level at the first home visit), which we used as a control measure or background measure in our model building. This variable is a rough indicator of socio-economic level. We also created a mealtime discourse composite, consisting of the average of percent of narrative talk at the two home visits and the average of percent of explanatory talk at the two home visits. This measure gives us an idea of the family's proportion of discourse talk at mealtimes, reflecting the amount of exposure to such talk the child receives. The third composite was a child sophistication measure at age 3, made up of the average length of the child's turn in the elicited report at age 3 and the average length of the child's turn in the age-three mealtime. We are assuming that a child who is able to put together longer utterances and hold the floor for these longer utterances has much more sophisticated conversational skill.

These three variables were used as predictors of the formal definitions score, along with a fourth variable, the number of mealtimes returned by the family over the two home visits. This last variable we use as a proxy for the family's ability to follow through (i.e., can they follow through on their commitment to the study by taping and returning a mealtime conversation?). This variable is also used as a background variable. The results of the regression analysis are found in Table 5.

Table 5
Regression Models for Predicting Formal Definition Task Score

Model	Demo-graph. ß	# of MT's returned ß	MT % of Talk Disc. ß	Child Soph. (age 3) ß	R^2	d.f. Error	Incr. to R^2
I	.197	---	---	---	.039	71	---
II	---	.304	---	---	.050	72	---
III	---	---	.195	---	.036	61	---
IV	---	---	---	.366**	.129**	51	---
V (III+IV)	---	---	.372**	.408***	.239***	50	.110***
VI (I+II+V)	.222*	.971***	.352***	.359***	.492***	48	.253***
VII†	.222	.968***	.354***	.352**	.472***	47	---

*** p < .005
** p < .01
* p < .05

† One high-leverage case removed

Only the child sophistication measure predicts the formal definitions score on its own, predicting 12.9 percent of the variation in formal definitions. However, when the child

[2] As we continue with the study we will use outcome measures collected at ages 6, 7, 8, and 9.

sophistication composite and the mealtime discourse are included in the model (Model V), together they predict 23.9 percent of the variation in formal definition scores. When we include the family background variables in the model (Model VI), the demographics composite and the number of mealtimes returned, a surprising 49.2 percent of the variation in formal definitions is predicted. There was one case in Model VI that had high influence; once this case was removed from the model, however, the model (Model VII) still held up with only minor changes in the coefficients. Hence, we take Model VI as our final model:

> Formal definitions score = -1.621 + (.222 x demographics composite) + (.971 x number of mealtimes returned) + (.352 x mealtime discourse composite) + (.359 x age-three child sophistication composite)

Formal definition scores are predicted by a combination of family variables and by the child's conversational sophistication at age three. Controlling for family socio-economic level and family's follow-through, greater levels of family mealtime discourse and greater child conversational sophistication are associated with higher formal definitions scores.

Predicting Story Comprehension Scores

We found two sets of variables that predict story comprehension scores. In the first set we found that two variables, the child's average length of a turn in the age-three elicited report and the book of choice index at age 4, predict story comprehension (see Table 6).

Table 6
Regression Models for Predicting Story Comprehension Task Scores

Model	ER (age 3) Child MLU ß	BR (age 4) BOC Index ß	R^2	d.f. Error	Increment to R^2
I	.694***	---	.166***	66	---
II	---	.198***	.155***	48	---
III (I+II)	.631***	.202***	.349***	42	.194***
IV†	.660***	.347***	.322***	40	---

*** p < .005
** p < .01
* p < .05

† Two high-leverage cases removed

Together these two variables account for 34.9 percent of the variation in story comprehension scores (Model III). After two high-leverage cases were removed (Model IV), we find that the model holds up, but that the bookreading index coefficient is increased. For this reason, we consider Model IV our final model. Both of the predictors in this model are measures of the child's ability, as opposed to the mother's or family's input. The demographics variable and the number of mealtimes returned, our two family background variables, did not add any explanatory power to the model, and hence, were left out.

> Story comprehension score = 3.796 + (.660 x child's MLU in age 3 elicited report) + (.347 x bookreading information index age 4 book of choice)

The second set of variables that predict story comprehension are the number of mealtimes returned, the average proportion of explanatory talk in mealtimes over the two home visits, and the child sophistication composite. Table 7 presents the results of this analysis.

Table 7
Regression Models for Predicting Story Comprehension Task Scores

Model	# of MT's returned ß	MT % of Talk Exp. ß	Child Soph. (age 3) ß	R^2	d.f. Error	Increment to R^2
I	.496	---	---	.029	72	---
II	---	.050**	---	.108**	61	---
III	---	---	.756**	.122**	51	---
IV(II+III)	---	.082**	.719***	.306***	50	.184***
V(I+II+III)	1.44**	.078***	.709***	.400***	49	.094***
VI†	1.44*	.078**	.670*	.365***	47	---

*** p < .005
** p < .01
* p < .05

† Two high-leverage cases removed

The percent of explanatory talk at mealtimes and the child sophistication composite each predict story comprehension separately (Models II and III), but the number of mealtimes returned does not (Model I). Together explanatory talk and child sophistication account for 30.6 percent of the variation in story comprehension (Model IV). When the number of mealtimes returned is included (Model V), 40.0 percent of the variation in story comprehension is explained. When two high-leverage cases are excluded from the analysis (Model VI), the coefficients remain fairly similar, and the predictors explain 36.5 percent of the variation. We therefore consider Model V to be our final model.

> Story comprehension score = 2.62 + (1.4 x number of mealtimes returned) + (.078 x average percent of explanatory talk at mealtime) + (.709 x child sophistication composite)

Again we see that the child's conversational sophistication at age three is a predictor of an outcome, in this case, the story comprehension score. But we also find that the family measures of number of mealtimes returned and the proportion of explanatory talk in mealtimes also predict story comprehension.

Discussion

In the analyses described here, we found that a combination of home social and economic measures, general family conversational measures, and child language measures are the best predictors of formal definitions scores and story comprehension scores. Interestingly, mother's conversational input measures did not emerge as strong predictors. However, we can see the mother's impact in the information index (for bookreading) as a reflection of her ability to involve the child in the conversation. She allows the child to participate in this talk, giving him the floor in conversations. A mother who knows how to use questions to engage her child in conversation, just enough to encourage and support the reluctant child while allowing him to take over once engaged, is turning over the responsibility for talk, upping the ante for the child as they go.

We also see the mother's input reflected in the proportions of explanatory talk and narrative talk that occurs within the family mealtime conversation, since mothers are responsible for about half of that talk, on average. The presence of discourse talk in models predicting literacy outcomes suggests that families that engage in decontextualized talk, such as explanatory talk and narrative

talk, expose their children to interesting and extended and sophisticated ways of expressing themselves.

This paper has focussed only on the home contributions to early literacy skills; we have not addressed the support that preschool classrooms can provide to the child's development. Preschools are in a crucial position to aid in the development of language and literacy skills. The Home-School Study has studied preschool classroom influences in conjunction with home influences (Beals & Smith, 1992), and found that home and school provide both overlapping and complementary contributions to the development of language and literacy.

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